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THE BIOLOGICAL SURVEYS MAMMAL COLLECTION^{1/}

Prepared in the Section of Biological Surveys
Division of Wildlife Research

The Bureau of Biological Survey, now included in the Fish and Wildlife Service, had its inception on July 1, 1885, when there became available \$5,000 that had been appropriated by the 48th Congress for the promotion of economic ornithology. The unit, with C. Hart Merriam in charge, was made a branch of the Division of Entomology, of the Department of Agriculture. A year later, July 1, 1886, it was made an independent Division of Economic Ornithology and Mammalogy. An appropriation of \$10,000 was granted for the promotion of economic ornithology and mammalogy, thus enlarging the scope of the work over the previous year and increasing its usefulness. The function of the enlarged Division was to investigate the food habits, distribution, and migrations of North American birds and mammals in relation to agriculture, horticulture, and forestry. By act of April 25, 1896, 29 Stat. 99, 100, 102, the organization became known as the Division of Biological Survey, and on March 3, 1905, it was designated the Bureau of Biological Survey, a name that was retained until one year after the Bureau's transfer on July 1, 1939, from the Department of Agriculture to the Department of the Interior. On June 30, 1940, the Biological Survey was consolidated with the Bureau of Fisheries under the name Fish and Wildlife Service. Since the custody of the mammal collection is in charge of the Section of Biological Surveys, the name Biological Surveys Collection is now used.

The Biological Surveys Mammal Collection is limited to specimens of recent North and Middle American ^{2/} species, of which it has the largest representation of any collection in the world. Included is the type specimen of the smallest North American mammal, Microsorex hoyi winnemana, a tiny shrew less than 3 inches long from tip of nose to tip of tail, which

^{1/} This leaflet supersedes Wildlife Leaflet BS-153 issued in February 1940 by the Bureau of Biological Survey.

^{2/} Middle America is the zoogeographic region between the Rio Grande and Colombia.

was collected by Edward A. Preble along the Potomac, on the Virginia side of the river, and the type of the largest species of all existing carnivores, the Kodiak bear, *Ursus middendorffi*, collected by B. J. Bretherton on Kodiak Island, Alaska.

The most cherished, valuable, and really irreplaceable specimens of any collection are the types and topotypes. There are 1,331 type specimens in the Biological Surveys Collection, 1,276 of which were described by members of the Service staff. More than 2,500 species and subspecies of North American mammals are recognized today and many more doubtless will be. During his administration as chief of the Bureau of Biological Survey Dr. Merriam made special efforts to obtain for the collection a representative series of topotypes, i.e., additional specimens from the type locality, because of their importance in determining the validity and relationships of species and subspecies. He also, among other studies, conducted special research on the brown and grizzly bears, and for this investigation 1,864 specimens were gathered together. In 1918 the results of the study were published (*Review of the Grizzly and Big Brown Bears of North America (Genus Ursus)*, North Amer. Fauna No. 41). In this work Dr. Merriam described 22 new forms, which with the 59 he had previously named from the collection brought the total to 81. This study of material in the collection is representative of many others made by various scientists.

Dr. Merriam, who was interested in many generic groups, described 651 of the type specimens now in the collection, and Edward A. Goldman described 269. Other members of the Service's staff, past or present, who have described several new forms include Vernon Bailey, A. H. Howell, H. H. T. Jackson, E. W. Nelson, W. H. Osgood, and E. A. Preble.

The mammal specimens collected for the Biological Survey by the Death Valley Expedition in 1891 numbered about 5,000 and comprised the largest contribution from a single expedition. E. W. Nelson and E. A. Goldman collected more than 17,000 mammals in Mexico over a period of years, thus making the largest contribution of any collector or team of collectors.

The early reports of the Chief of the Division of Ornithology and Mammalogy record the progress of the organization. In 1890 it was stated: "The collection begun by the Division a little more than a year and a half ago has made gratifying progress, now numbering upwards of 4,000 specimens of mammals." In the annual report of 1891 the Chief stated: "The study series of mammals and birds belonging to the Division has been so largely increased during the year that the entire time of one clerk is necessary for the proper care of the collection." During succeeding years the mammal collection steadily grew until on January 1, 1942, it numbered 138,130 specimens, consisting of skins, skulls, and skeletons.

The small mammals are made up into standard study skins and are arranged in pasteboard trays in drawers in metal-covered cases (fig. 1,A), while the larger skins are tanned and hung in a specially constructed room, where they are suspended from iron rods by loops of cords passed through the skin above

the nose and attached to a rod with an S-hook (fig. 1,B). The skulls are placed in vials, cardboard boxes, or cardboard trays, according to size. and are arranged in systematic order. Details of technique and methods in the care of the collection have been described in a paper entitled, "The Care of Museum Specimens of Recent Mammals," by Hartley H. T. Jackson (Jour. Mamm. 7: 113-118, illus. 1926).

When the Biological Survey was asked to undertake the control of predatory animals in 1916, a special effort was made to utilize to best advantage the mammals killed, and large numbers of specimens taken by hunters were deposited in the collection. As a result it now contains specimens of 1,068 wolves, 3,599 coyotes, and 573 mountain lions, the largest study series of these North American predators in the world. Manuscripts are in preparation on the life histories and revisions of the wolves and the mountain lions by E. A. Goldman and Stanley P. Young (fig. 1,C), but the coyotes have not yet been intensively studied.

The collection is indispensable to adequate administration of wildlife along the many lines embraced in the general activities of the Service, and is the basis for all its distributional, taxonomic, and identification studies on mammals. Specimens are available also for research purposes to responsible museums, educational institutions, and scientists throughout the country.

The following 19 new genera of rodents and rabbits have been described from the collection, 14 from specimens collected by Nelson and Goldman in Mexico:

<u>Microdipodops</u>	<u>Orthogeomys</u>	<u>Neotomodon</u>	<u>Phenacomys</u>
<u>Pappogeomys</u>	<u>Macrogeomys</u>	<u>Nelsonia</u>	<u>Napaeozapus</u>
<u>Cratogeomys</u>	<u>Zygogeomys</u>	<u>Teanopus</u>	<u>Brachylagus</u>
<u>Platygeomys</u>	<u>Liomys</u>	<u>Hodomys</u>	<u>Romerolagus</u>
<u>Heterogeomys</u>	<u>Ototylomys</u>	<u>Xenomys</u>	

The Biological Surveys Collection of North American recent mammals is stored in the United States National Museum, and laboratory facilities for study are provided there. The collection is accessioned in the museum catalogs, but is maintained as an independent unit. The richness of its composition from North America is shown by the following enumeration as of January 1, 1942:

Specimens of mammals in the Biological Surveys Collection
January 1, 1942

This list does not include any specimens collected outside North and Middle America and the West Indies nor any alcoholic specimens, all of which, together with nearly all the pinnipeds, were transferred to the United States National Museum collection proper.

Marsupialia (opossums):

Didelphidae 526

Insectivora (moles, shrews):

Talpidae 993
Soricidae 6,625
Total 7,618

Chiroptera (bats):

Emballonuridae 62
Noctilionidae 10
Phyllostomidae 541
Desmodontidae 64
Natalidae 48
Vespertilionidae 2,632
Molossidae 463
Unidentified 62
Total 3,882

Carnivora (flesh-eating mammals, including bears, weasels, wolves, cats, etc.):

Ursidae 3,221
Procyonidae 898
Bassariscidae 166
Mustelidae 7,017
Viverridae 4
Canidae 6,634
Felidae 2,710
Total 20,650

Pinnipedia (walruses, seals):

Otariidae 2

Primates (monkeys):

Callitrichidae 11
Alouattidae 38
Aotidae 10
Cebidae 63
Total 122

Rodentia (squirrels, pocket

gophers, mice, rats, etc.):

Sciuridae 22,295
Geomyidae 8,079
Heteromyidae 11,388
Castoridae 356
Cricetidae 51,860
Muridae 664
Aplodontiidae 265
Zapodidae 1,415
Erethizontidae 959
Echimyidae 57
Dasyproctidae 55
Cuniculidae 26
Hydrochoeridae 6
Total 97,425

Lagomorpha (hares, rabbits, pikas):

Leporidae 840
Leporidae 4,882
Total 5,722

Artiodactyla (even-toed hoofed mammals, including pigs, deer, oxen, etc.):

Tayassuidae 88
Cervidae 1,367
Antilocapridae 129
Bovidae 518
Total 2,102

Perissodactyla (tapirs, horses):

Tapiridae 9

Xenarthra (edentates):

Bradypodidae 5
Choloepodidae 3
Myrmecophagidae 24
Dasypodidae 40
Total 72

Grand total for the entire mammal collection 138,130

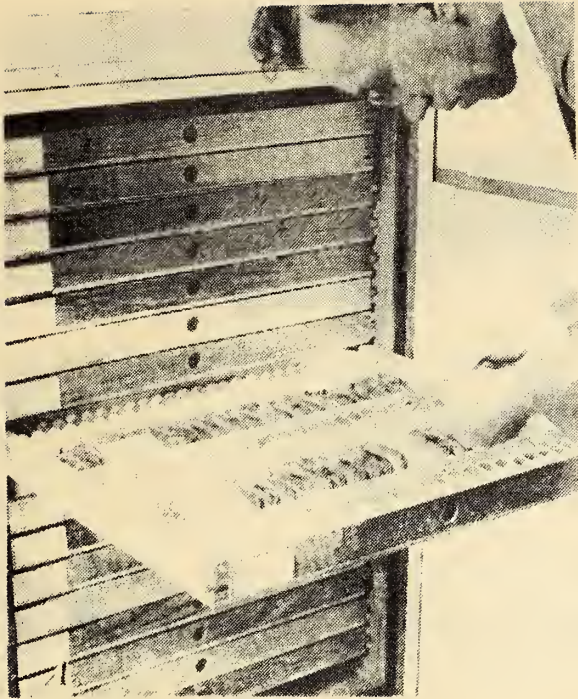


FIGURE 1.--A, Quarter-unit case for small skins. Half-unit case is twice as long but is of same depth and height. Unit case is greater than half-unit in all dimensions and has about four times the volume. B, Section of tanned-skin room: wolf skins at right; bobcat and lynx skins at left. C, Comparing wolf skulls for identification in the skull room. Tops of storage cases are used for table space. Rack on top of cases is used for large-antlered skulls.

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